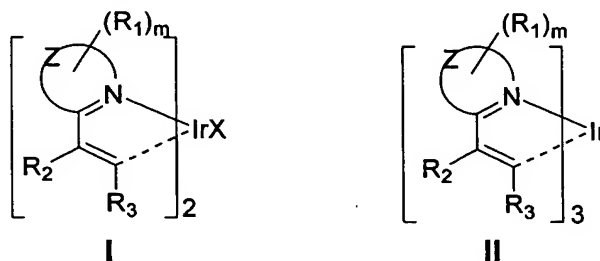


**Abstract:**

A phosphorescent Ir complex having the following structures (I) or (II) is used as an emitter in an organic light emitting diode (OLED):



- 5 wherein X is an arbitrary monoanionic bidentate ligand; Z is an arbitrary moiety constituting a nitrogen-containing heterocyclic group; R<sub>1</sub> is a substituent on the nitrogen-containing heterocyclic group; m is 0 or a positive integer; R<sub>2</sub> and R<sub>3</sub> independently are H, halogen, C1-C6 alkyl, a halogen-substituted C1-C6 alkyl, C1-C6 alkoxy, phenyl C1-C6 alkyl, amino, aryl, heterocyclic aryl substituent.

10